

# Test Sheet 3

*by* Noah Cooper

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**WORKSHEET 3 – TESTING (Lap Times)**

1. Original code:

```
#define _CRT_SECURE_NO_WARNINGS
#include <stdio.h>
#include <math.h>
#include <ctype.h>
#include <stdlib.h>
#include <string.h>
#include <time.h>
#include <Windows.h>

void main()
{
    int laps = 0, targetCounter=0;
    float laptime[5], total=0, avg=0, fastest=99999, slowest=-99999, target=0, targettime;

    printf("what is your target lap time? ");
    scanf("%f", &targettime);
    if (targettime < 10)
    {
        printf("\ntype number above 10 and less than 9999");
        printf("\nwhat is your target lap time? ");
        scanf("%f", &targettime);
    }

    for (int i = 0; i < 5; i++)
    {
        laps++;

        if (laptime[i] < 10 || laptime[i] >= 9999)
        {
            printf("\ntype number above 10 and less than 9999");
            printf("\nWhat time was the lap %d ", laps);
            scanf("%f", &laptime[i]);
        }
        total = laptime[i] + total;
        if (fastest > laptime[i])
        {
            fastest = laptime[i];
        }
        else if (slowest < laptime[i])
        {
```

```

        slowest = laptime[i];
    }

    if (targettime >= laptime[i])
    {
        targetCounter++;
    }
}
laps = 0;
for (int i = 0; i < 5; i++)
{
    laps++;
    printf("\nLap %d gotten %.2f",laps, laptime[i]);
}

printf("\nYou're Statistics\n");

printf("\n1. In total the racer gotten %f", total);
avg = total / laps;
printf("\n2. The average is %.2f", avg);

printf("\n3. The slowest lap was lap %d at %.2f", laps,slowest);
printf("\n4. The fastest lap was lap %d at %.2f", laps, fastest);

printf("\n5. %d of your laps were better than or equal than your chosen
target",targetCounter);

printf("\n6.");
laps = 0;
for (int i = 0; i < 5; i++)
{
    laps++;
    printf("\nLap %d was %.2f", laps, laptime[i]);

    if (target == laptime[i])
    {
        printf(" which was equal to the previous lap");
    }
    else if (target > laptime[i])
    {
        printf(" which was faster to the previous lap");
    }
    else
    {
        printf(" which was slower to the previous lap");
    }
}

```

```
        target = laptime[i];  
    }  
}
```

## 2. Code Testing

For each test below, run your code and show the results of the scenarios below. Present a screenshot of what happened when the programme ran. Did the programme behave correctly or did it do something unexpected, and if so, why?

a) Test a lap time for your programme:

- i) 42 seconds
- ii) 2 seconds
- iii) -4 seconds
- iv) 53444 seconds
- v) Test the target lap time – show that the values entered are reasonable

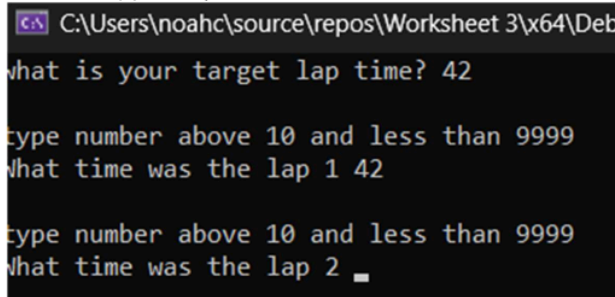
b) Using the same five lap times as the sample output ie

*Lap 1: 42.3*  
*Lap 2: 42.1*  
*Lap 3: 44*  
*Lap 4: 44*  
*Lap 5: 39.4*

Examine each statistic (1-6) and comment on whether the correct answer(s) are displayed or not. (If any statistics were incomplete after Phase 1 (code completed in class) simply write "Unfinished")

c) Test two further sets of lap times of your own choice.

Template for tests:

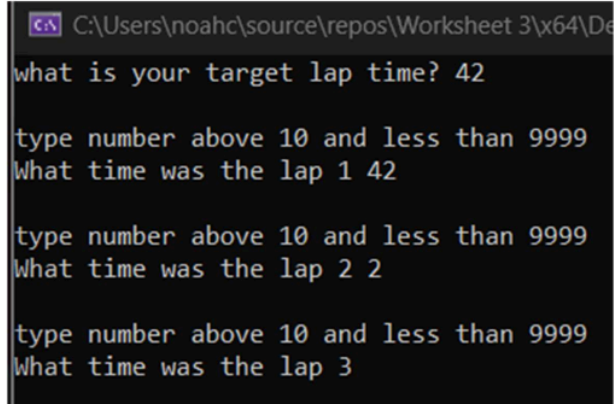
|                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test: 42 seconds                                                                                                                                                                                                                                                                                       |
| A                                                                                                                                                                                                                                                                                                      |
| Screenshot(s) of output:<br>                                                                                                                                                                                        |
| Result: Did the programme behave as expected ie syntactically and logically correct?<br>YES/NO (delete as appropriate)<br>If YES, comment on what happened.<br>If NO, what went wrong and why? Suggest how things could be improved<br><br>The programme behaved correctly and would allow to input 42 |

(Copy and paste box above for each of the rest of the tests)

Test: 2 seconds

A

Screenshot(s) of output:



```
C:\Users\noahc\source\repos\Worksheet 3\x64\De
what is your target lap time? 42

type number above 10 and less than 9999
What time was the lap 1 42

type number above 10 and less than 9999
What time was the lap 2 2

type number above 10 and less than 9999
What time was the lap 3
```

Result: Did the programme behave as expected ie syntactically and logically correct?

YES/NO (delete as appropriate)

If YES, comment on what happened.

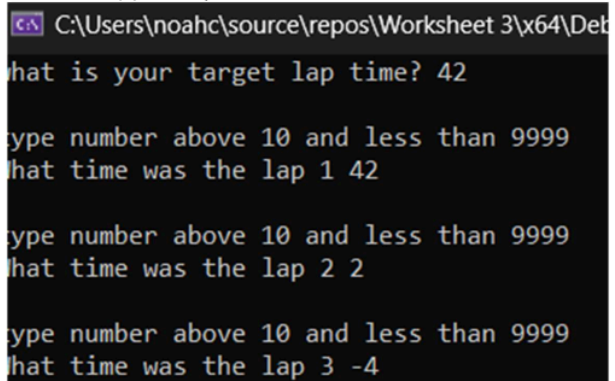
If NO, what went wrong and why? Suggest how things could be improved

Whilst the programme directly says 10 and less than 9999, it seems to let the programme carry on

Test: -4 seconds

A

Screenshot(s) of output:



```
C:\Users\noahc\source\repos\Worksheet 3\x64\De
what is your target lap time? 42

type number above 10 and less than 9999
What time was the lap 1 42

type number above 10 and less than 9999
What time was the lap 2 2

type number above 10 and less than 9999
What time was the lap 3 -4
```

Result: Did the programme behave as expected ie syntactically and logically correct?

YES/NO (delete as appropriate)

If YES, comment on what happened.

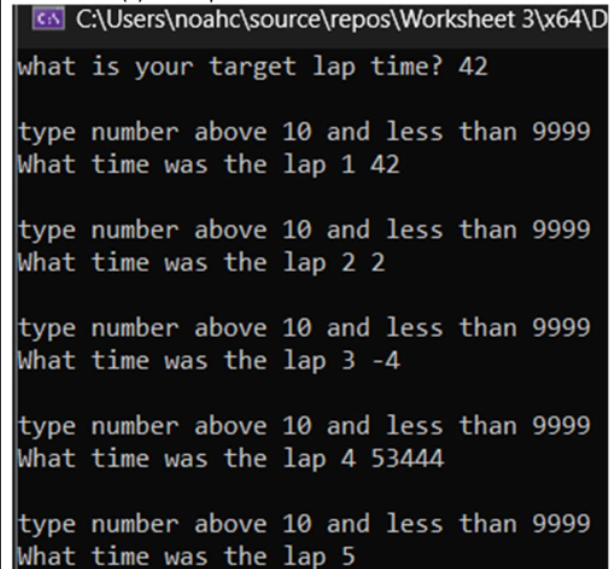
If NO, what went wrong and why? Suggest how things could be improved

The programme seems to have skipped past the fact that this is mathematically incorrect and for some reason except this nonsense of data

Test: 53444 seconds

A

Screenshot(s) of output:



```
C:\Users\noahe\source\repos\Worksheet 3\x64\D
what is your target lap time? 42

type number above 10 and less than 9999
What time was the lap 1 42

type number above 10 and less than 9999
What time was the lap 2 2

type number above 10 and less than 9999
What time was the lap 3 -4

type number above 10 and less than 9999
What time was the lap 4 53444

type number above 10 and less than 9999
What time was the lap 5
```

Result: Did the programme behave as expected ie syntactically and logically correct?

YES/NO (delete as appropriate)

If YES, comment on what happened.

If NO, what went wrong and why? Suggest how things could be improved

This seems to have passed through and lets the program carry on, which shouldn't happen?

Test: the target lap time – show that the values entered are reasonable

A

Screenshot(s) of output:

```
Microsoft Visual Studio Debug Console

what is your target lap time? 42

type number above 10 and less than 9999
what time was the lap 1 42

type number above 10 and less than 9999
what time was the lap 2 2

type number above 10 and less than 9999
what time was the lap 3 -4

type number above 10 and less than 9999
what time was the lap 4 53444

type number above 10 and less than 9999
what time was the lap 5 20

Lap 1 gotten 42.00
Lap 2 gotten 2.00
Lap 3 gotten -4.00
Lap 4 gotten 53444.00
Lap 5 gotten 20.00
You're Statistics

1. In total the racer gotten 53504.000000
2. The average is 10700.80
3. The slowest lap was lap 5 at 53444.00
4. The fastest lap was lap 5 at -4.00
5. 4 of your laps were better than or equal than your chosen target
6.
lap 1 was 42.00 which was slower to the previous lap
lap 2 was 2.00 which was faster to the previous lap
lap 3 was -4.00 which was faster to the previous lap
lap 4 was 53444.00 which was slower to the previous lap
lap 5 was 20.00 which was faster to the previous lap
C:\Users\noahc\source\repos\Worksheet 3\x64\Debug\Worksheet 3.exe (t
Result: Did the programme behave as expected ie syntactically and logically correct?
YES/NO (delete as appropriate)
If YES, comment on what happened.
If NO, what went wrong and why? Suggest how things could be improved

This seems to have accepted and allowed all the nonsense data in the programme which shouldn't
have worked, not to mention that there are a 6 .0's where it says "1. In total the racer gotten
53504.000000"
```

Test: using the same five lap times as the sample output, Examine each statistic (1-6) and comment on whether the correct answer(s) are displayed or not. (If any statistics were incomplete after Phase 1 (code completed in class) simply write "Unfinished")

B

Screenshot(s) of output:

```
what is your target lap time? 41
Lap 1 gotten 42.30
Lap 2 gotten 42.10
Lap 3 gotten 44.00
Lap 4 gotten 44.00
Lap 5 gotten 39.40
You're Statistics

1. In total the racer gotten 211.799988
2. The average is 42.36
3. The slowest lap was lap 5 at 44.00
4. The fastest lap was lap 5 at 39.40
5. 1 of your laps were better than or equal than your chosen target
6.
lap 1 was 42.30 which was slower to the previous lap
lap 2 was 42.10 which was faster to the previous lap
lap 3 was 44.00 which was slower to the previous lap
lap 4 was 44.00 which was equal to the previous lap
lap 5 was 39.40 which was faster to the previous lap
```

Result: Did the programme behave as expected ie syntactically and logically correct?

YES/NO (delete as appropriate)

If YES, comment on what happened.

If NO, what went wrong and why? Suggest how things could be improved

On the 1<sup>st</sup> bit the total is "211.799988" when in reality its 211.8, guessing this this has more to do with how C language does with the program rather than the code itself

2<sup>nd</sup> part is correct with it being actually "42.36"

3<sup>rd</sup> is kind of correct as it knew what time was the slowest but not the lap, guessing its having with some confusion with it being both lap 3 and 4 being the same number

4<sup>th</sup> is also actually correct

5<sup>th</sup> was also completely correct

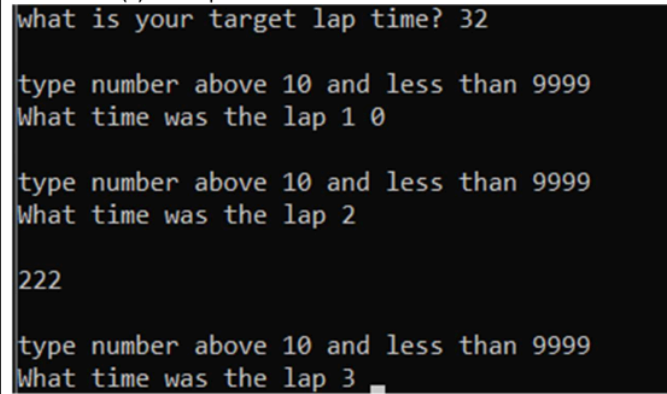
6<sup>th</sup> works perfectly well and also has no issues

Test 2 further sets of lap times of your own choice

Test: enter nothing (as in "")

C

Screenshot(s) of output:



```
what is your target lap time? 32

type number above 10 and less than 9999
What time was the lap 1 0

type number above 10 and less than 9999
What time was the lap 2

222

type number above 10 and less than 9999
What time was the lap 3 _
```

Result: Did the programme behave as expected ie syntactically and logically correct?

YES/NO (delete as appropriate)

If YES, comment on what happened.

If NO, what went wrong and why? Suggest how things could be improved

The program didn't continue until it has entered a valid number

3. Consider the results of the above tests and revisit your original code in order to address any tests that failed and/or improve code efficiency.

(Note: you may not be able to solve all of the problems that were encountered, but solve as many as you can.)

Paste your full revised code here :

[Copy and paste your full revised code here – note, do not use a screenshot]

```
#define _CRT_SECURE_NO_WARNINGS
#include <stdio.h>
#include <math.h>
#include <ctype.h>
#include <stdlib.h>
#include <string.h>
#include <time.h>
#include <Windows.h>

void main()
{
    int laps = 0, targetCounter = 0, slowestLap = 0, fastestLap = 0;
    float laptime[5], total = 0, avg = 0, fastest = 99999, slowest = -99999, target = 0,
    targettime;

    printf("what is your target lap time? ");
    scanf("%f", &targettime);
    if (targettime < 10)
    {
        printf("\ntype number above 10 and less than 9999");
        printf("\nwhat is your target lap time? ");
        scanf("%f", &targettime);
    }

    for (int i = 0; i < 5; i++)
    {
        laps++;

        while (1)
        {
            printf("\nWhat time was the lap %d ", laps);

            if (scanf("%f", &laptime[i]) == 1 && laptime[i] > 10 && laptime[i] <= 9999)
            {
                total = laptime[i] + total;
                if (fastest > laptime[i])
                {
                    fastest = laptime[i];
                    fastestLap = laps;
                }
                else if (slowest < laptime[i])
                {
                    slowest = laptime[i];
                    slowestLap = laps;
                }

                if (targettime >= laptime[i])
                {
                    targetCounter++;
                }
            }
        }
    }
}
```

```

        break;
    }
    printf("You need to input a number between 10 to 9999");

}

}
laps = 0;
for (int i = 0; i < 5; i++)
{
    laps++;
    printf("\nLap %d gotten %.2f", laps, laptime[i]);
}

printf("\nYou're Statistics\n");

printf("\n1. In total the racer gotten %.2f", total);
avg = total / laps;
printf("\n2. The average is %.2f", avg);

printf("\n3. The slowest lap was lap %d at %.2f", slowestLap, slowest);
printf("\n4. The fastest lap was lap %d at %.2f", fastestLap, fastest);

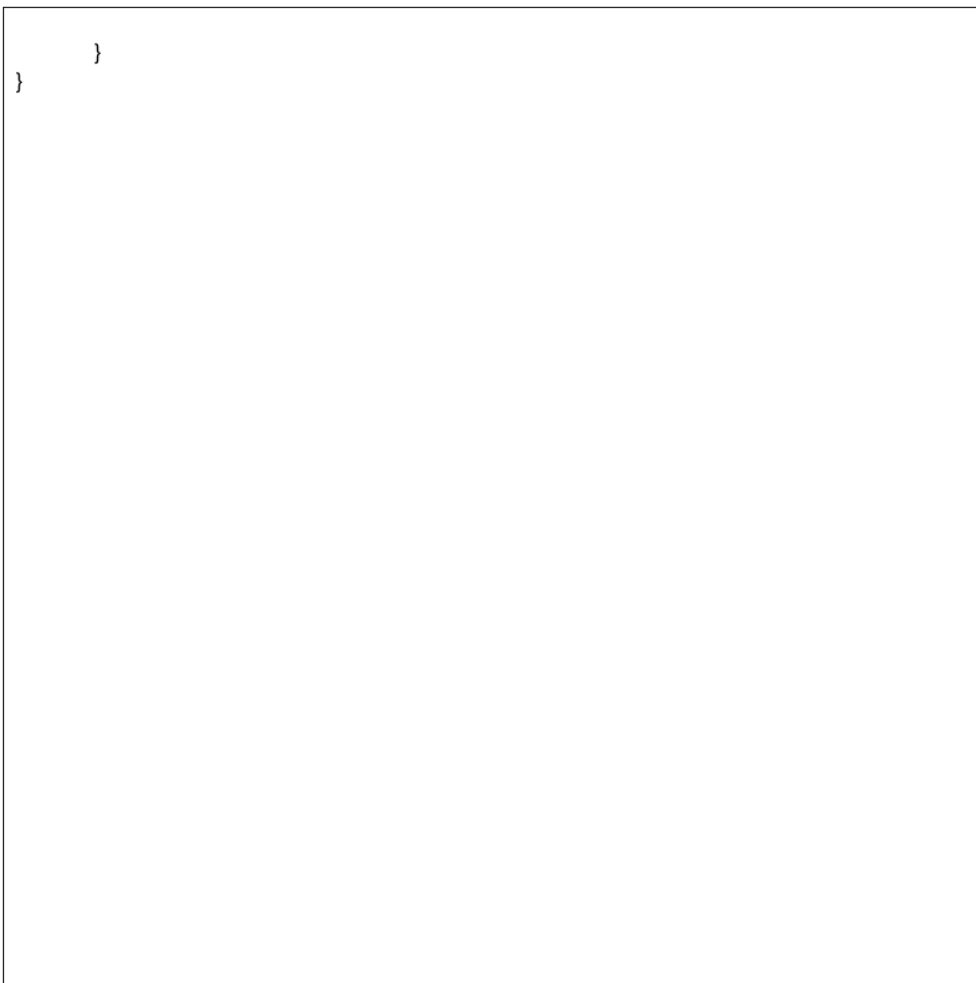
printf("\n5. %d of your laps were better than or equal than your chosen target",
targetCounter);

printf("\n6.");
laps = 0;
for (int i = 0; i < 5; i++)
{
    laps++;
    printf("\nLap %d was %.2f", laps, laptime[i]);

    if (target == laptime[i])
    {
        printf(" which was equal to the previous lap");
    }
    else if (target > laptime[i])
    {
        printf(" which was faster to the previous lap");
    }
    else
    {
        printf(" which was slower to the previous lap");
    }

    target = laptime[i];
}

```



# Test Sheet 3

## GRADEMARK REPORT

FINAL GRADE

GENERAL COMMENTS

### WORKSHEET 3

13/0

Coding- The final code shows improvement. There are some issues,such as there should be a reasonable target lap time - I could enter 2 seconds, which would be pushing it even for Superman :) Lap 1 cannot be faster/slower than the previous lap. Be careful on the limits, it won't let me enter 10 for a laptime, the lowest is 11, so make sure to test on the boundaries.

7/10

Testing - I wasn't quite sure whether you meant YES or NO for your tests at time, please state which it is! Tests are OK, for some tests it would be better if you say why it didn't work rather than just "it shouldn't have worked" - why not?

6/10

Overall- 13.5/20

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